

Amendments to the Drawing Figures:

The attached drawing sheet include proposed changes to FIG 7 and replaces the original sheet including FIG 7.

Attachment: One (1) Replacement Sheet.

REMARKS/DISCUSSION OF ISSUES

Claims 1-78 are pending in the application. Claims 1, 19, 35, 55 and 75-78 are independent claims. Because no claims were amended in the present Response, Applicants are not required to provide a listing under Rule 121.

Applicant(s) thank(s) the Examiner for acknowledging the claim for priority and receipt of certified copies of all the priority document(s).

The Examiner is respectfully requested to state whether the amendments to the drawings are acceptable.

Objections and Amendments to the Drawings

Applicants provide herewith a Replacement Sheet of Drawings for Fig. 7. The claim included reference character '48' in error. Applicants have deleted this reference character. The amendment adds no new matter. Entry of this amendment and withdrawal of the objection to the drawings are respectfully requested.

Applicants have considered the objections to Figs. 1, 4 and 6-8 and respectfully traverse the objections. The Office Action alleges that these Figs. are flow-charts. However, Figs. 1, 4 and 6-8 are not flow-charts (as would normally be used in describing a method). Therefore, the objections are improper and should be withdrawn.

Rejections Under 35 U.S.C. § 103

1. Claims 1, 2, 8, 9, 11-13, 15, 19, 25-27,29, 30, 32, 75-76 and 78 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of *Ossman* (U.S. Patent Publication 20060119223) in view of *Sumanaweera, et al.* (U.S. Patent 6,359,367--not 6,625,367 as stated in the Office Action.). For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.
2. Claims 3-5,14,16-18,20, 21, 31, 33-39,42,43,45-60,63,64,66-74 and 77 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of *Ossman* in view of *Sumanaweera*,

et al. and *Savord* (U.S. Patent 6,380,766). For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.

3. Claims 6, 7, 10, 22-24 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of *Ossman* in view of *Sumanaweera, et al.* and *Mequio* (U.S. Patent 4,771,205). For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.

4. Claims 40, 41, 44, 61, 62 and 65 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of *Ossman* in view of *Sumanaweera, et al.*, *Savord* and *Mequio*. For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.

Analysis of obviousness under 35 U.S.C. §103 requires determination of the scope and content of the prior art, the differences between the prior art, and the claims at issue, and the level of ordinary skill in the pertinent art.

W.L. Gore & Associates, Inc. v. Garlock, Inc. 220 USPQ 303, 311 (1983) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CAFC 1966)). Moreover, there must have been something present in the teachings of the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. *W.L. Gore & Associates* at 311 (citing *In re Bergel* 130 USPQ 206, 208 (CCPA 1961)); and *In re Spinnoble* 160 USPQ 237, 244 (CCPA 1969)).

Furthermore, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is a reason, suggestion or motivation to do so. The reason, suggestion or motivation may come from references themselves; from knowledge of those skilled in art that certain references or disclosures in references are known to be of interest in the particular field; or from nature of the problem to be solved to do so found in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *Pro-Mold and Tool Co. v. Great Lakes Plastics Inc.* 37 USPQ2d 1626 (CAFC 1996). Moreover, prior knowledge in the field must be supported by tangible teachings of reference materials. *Cardiac Pacemakers Inc. v. St. Jude* PCIP.436

Medical Inc. 72 USPQ 2d 1333, 1336 (CAFC 2004).

However, hindsight is never an appropriate motivation for combining references and/or the requisite knowledge available to one having ordinary skill in the art. To this end, relying upon hindsight knowledge of applicants' disclosure when the prior art does not teach nor suggest such knowledge results in the use of the invention as a template for its own reconstruction. This is wholly improper in the determination of patentability. *Sensonics Inc. v. Aerosonics Corp.*, 38 USPQ 2d 1551-1554 (CAFC 1996), citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 220 USPQ 303. Moreover, the determination of obviousness cannot be based on the hindsight combination of components selectively culled out from the prior art to fit the parameters of the claims at issue. *Crown Operations International Ltd. v. Solutia Inc.* 62 USPQ2d 1917, 1922 (CAFC 2002).

a. Ossmann fails to disclose transmitting ultrasonic energy in tissue at a fundamental frequency

Claim 1 is drawn to an apparatus and features:

"... *transmitting ultrasonic energy in tissue at a fundamental frequency and of sufficient power to generate a harmonic of the fundamental frequency in the tissue.*"

Each of independent claims 19, 35, 55 and 75-78 includes a similar feature.

The Office Action states: "Ossman discloses an apparatus (Fig. 4) comprising: a two-dimensional array transducer (item 402) transmitting ultrasonic energy in tissue at a fundamental frequency." The Office Action then concedes that the reference fails to disclose that the "...transmitted ultrasonic frequency is transmitted with sufficient power to generate a harmonic of the fundamental frequency" and turns to secondary references in an attempt to cure this deficiency.

At the outset, Applicants note that claim 1 differs from its characterization in the Office Action. Particularly, the second quoted portion of the Office Action differs from that which is claimed.

Furthermore, Applicants respectfully submit that the Office Action fails to comply with MPEP § 706. To wit, this section of the MPEP states, inter alia:

“The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity.”

In applying *Ossmann* in the rejection of claim 1, the Office Action cites a drawing figure (Fig. 4) and one reference character (412). There is no clear recitation of paragraphs or other reference characters of the reference that are the basis of the rejection. Within the over twelve paragraphs (approximately three columns) of *Ossmann* that relate to Fig. 4, the Examiner does not specifically cite where *Ossmann* discloses *transmitting ultrasonic energy in tissue at a fundamental frequency*. Accordingly, Applicants are left to speculate how the applied reference may be germane to the rejection of claim 1. Clearly, this is improper and deprives Applicants from providing a complete response in support of patentability. Thus, Applicants respectfully request that the present Office Action be withdrawn. Moreover, if another Office Action is provided to Applicants rejecting one or more of the claims, Applicants submit that any subsequent Office Action cannot properly be made final.

The above notwithstanding, Applicants submit that the reference to *Ossmann* does not disclose *transmitting ultrasonic energy in tissue at a fundamental frequency*. *Ossmann* relates to acoustic imaging systems and includes, inter alia, a protective cover configured to mate with a transducer body. A word search of the reference does not reveal the disclosure of a fundamental frequency or fundamental mode of ultrasonic energy. Reference is made in paragraph [0050] to an imaging system 204 with a beamformer 304 that sets the transmit frequency, f_0 , and magnitude of various transmit signals. However, there is no teaching or suggestion that the transmit frequency is a fundamental frequency as is specifically claimed.

b. *Sumanaweera, et al.* fails to disclose transmitting ultrasonic energy in tissue at a fundamental frequency and of sufficient power to generate a harmonic of the fundamental frequency in the tissue

The Office Action turns to *Sumanaweera, et al.* in an attempt to cure the deficiencies of *Ossmann*. In particular, the Office Action asserts that *Sumanaweera, et al.* discloses:

Sumanaweera *et al.* teaches an ultrasonic transducer array in which the transmitted frequency is the fundamental frequency, which excites a harmonic frequency of the fundamental frequency in the tissue (column 8, line 6 through column 9, line 5).

Again, Applicants note that claim 1 differs from the characterization set forth in the Office Action.

Sumanaweera, et al. discloses firing ultrasonic scan lines into the subject, whereby some of the acoustic energy is reflected back to the transducer array 10. In addition to receiving signals at the fundamental frequency, the non-linear characteristics of the tissue or optional contrast agents also produce responses at harmonic frequencies. The reference discloses that these harmonic frequencies are associated with non-linear propagation or scattering of transmit signals. (Kindly refer to column 8, line 64- column 9, line 6 of the reference to *Sumanaweera, et al.*)

However, as relied upon in the Office Action, *Sumanaweera, et al.* fails to disclose at least the **transmitting ultrasonic energy in tissue of sufficient power to generate a harmonic of the fundamental frequency in the tissue.**

For at least the reasons set forth above, Applicants respectfully submit that the reference to *Ossmann* and *Sumanaweera, et al.* alone or in combination fail to disclose at least one feature of claim 1. As such, a proper *prima facie* case of obviousness based on *Ossmann* and *Sumanaweera, et al.* has not been made and claim 1 and the claims that depend therefrom are allowable.

As noted, claims 19, 35, 55 and 75-78 each include a feature similar to the feature of claim 1 discussed above. The rejections of the claims apply *Ossmann* and *Sumanaweera, et al.* in substantially the same manner as these references were applied to claim 1. Therefore, and for substantially the same reasons Applicants maintain that the applied art fails to disclose at least one feature of each of independent claims 19, 35, 55 and 75-78. As such, a proper *prima facie* case of obviousness based on *Ossmann* and *Sumanaweera, et al.* has not been made and claims 19, 35, 55 and 75-78 and the claims that depend therefrom are allowable.

c. Applicants do not concede the propriety of the combination of references

As is known and as articulated above, a *prima facie* case of obviousness also requires that the various references be properly combined. Applicants have not specifically refuted the propriety of the combination herein. However, Applicant by no means concede that these combinations are proper and reserve their right to address these combinations in further and future replies.

CONCLUSION

In view of the foregoing explanations, Applicant(s) respectfully request(s) that the Examiner reconsider and reexamine the present application, allow claims 1-78 and pass the application to issue. In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact William S. Francos (Reg. No. 38,456) at (610) 375.8380 to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment (except for the issue fee) to Deposit Account No. 50-0238 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17, particularly extension of time fees.

Respectfully submitted,

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